

### **REMARKS**

Applicants respectfully submit that claims 1 - 3, 8, 14, 25 - 27, and 30 - 33 have been amended and claims 4, 9, 28 - 29, and 35 have been canceled without prejudice to more clearly point out the present invention. All the claims presently on file are in condition for allowance, which allowance is earnestly solicited.

### **CLAIM REJECTION UNDER 35 U.S.C. 101**

Claims 1 - 7, 9 - 33, and 35 were rejected under 35 U.S.C. 101. Applicants respectfully submit that the claims on file satisfy the requirements of 35 USC 101.

### **CLAIM REJECTIONS UNDER 35 U.S.C. 102**

#### **A. The Rejection**

Claims 1, 25, and 31 were rejected under 35 U.S.C. 102(b) as being anticipated by Kirsch et. al. (U. S. Patent No. 5,845,278), hereinafter referred to as "Kirsch".

Applicants respectfully traverse this rejection and submit that Kirsch does not disclose the elements and features of the claims on file. Consequently, the claims on file are not anticipated under 35 U.S.C. 102(b), and the allowance of these claims is earnestly solicited. In support of this position, Applicants submit the following arguments:

## **B. Brief Summary of the Present Invention**

Prior to presenting substantive arguments in favor of the allowability of the claims on file, it might be desirable to summarize the present invention.

**The present invention builds a centralized index of content that works in conjunction with an access control enforcing search protocol across networked providers.** The centralized index provides strong and quantifiable privacy guarantees that hold even if the index is made public. *(Reference is made to page 8, lines 16-24.)*

While a conventional inverted list maps queries to lists of matching documents, **the present invention maps queries to lists of matching providers.** Given a list of providers that may satisfy a query, it is up to the searcher to directly query such providers and request matching documents. The providers, on receiving a query and authenticating the searcher, return a list of documents filtered according to the access rights of the searcher. *(Reference is made to page 20, lines 7-13.)*

The present invention generates the centralized index (further referred to as the privacy-preserving index) by partitioning the providers into privacy groups. A vector is passed in a set of rounds from provider to provider within the privacy group. Each provider, upon receiving the vector, performs a randomized algorithm on the vector to generate a group content vector. The randomized algorithm ensures that the group content vector is sufficiently randomized to prevent a malicious provider within the networked providers to determine with any certainty the value of bits in the content vector of other providers. *(Reference is made to page 23, line 4 to page 24, line 23.)*

After the set of rounds is complete, the vector from each provider group is sent to a designated host. The present invention aggregates these vectors into a materialized index that serves as an implementation of the privacy-preserving index. *(Reference is made to page 24, line 25 to page 25, line 12.)*

In response to a query comprising one or more keywords, the privacy-preserving index returns a list of providers containing documents that may contain those keywords. The searcher then searches the specified providers with the keywords annotated with access privilege and authentication of the searcher. **Providers only return documents that match the query and that the user is permitted to access.** *(Reference is made to page 15, lines 8 – 20.)*

Furthermore, the list of providers may contain at least 50% false positives; i.e., some of the providers in the list do not contain documents that match the keywords *(reference is made to page 15, lines 13 – 15)*. Consequently, **an unauthorized searcher cannot determine with certainty what information is being shared** *(reference is made to page 8, lines 10-11)*, **enhancing the security and privacy of the privacy-preserving index of the present invention.**

### **C. Legal Standard for Lack of Novelty (Anticipation)**

The standard for lack of novelty, that is, for "anticipation," is one of strict identity. To anticipate a claim for a patent, a **single prior source must contain** all its essential elements, and the burden of proving such anticipation is on the party making such assertion of anticipation. Anticipation cannot be shown by combining more than one reference to show the elements of the claimed

invention. The amount of newness and usefulness need only be minuscule to avoid a finding of lack of novelty.

The following are two court opinions in support of Applicant's position of non anticipation, with emphasis added for clarity purposes:

- "Anticipation under Section 102 can be found only if a reference shows **exactly** what is claimed; where there are **differences** between the reference disclosures and the claim, a rejection must be based on obviousness under Section 103." *Titanium Metals Corp. v. Banner*, 778 F.2d 775, 227 USPQ 773 (Fed. Cir. 1985).
- "**Absence** from a cited reference **of any element** of a claim of a patent negates anticipation of that claim by the reference." *Kloster Speedsteel AB v. Crucible Inc.*, 793 F.2d 1565, 230 USPQ 81 (Fed. Cir. 1986), on rehearing, 231 USPQ 160 (Fed. Cir. 1986).

#### **D. Application of the Legal Standard of Novelty**

Applicants will now present arguments in support of the allowance of the representative independent claim 1, and the claims dependent thereon, over Kirsch.

Applicants respectfully submit that **Kirsch does not describe "a plurality of content providers cooperating to create a privacy-preserving index structure" or "grouping the content providers into a plurality of privacy groups"**. Rather, Kirsch discloses "the method may operate from a meta-index database created from standardized format collection statistics summary files

autonomously developed from the individual collections and preferably from the collection indexes. By using the collection indexes directly as the source of information for the summary files, the present invention establishes an independence from the proprietary algorithms used in creating the source indexes." *(Reference is made to column 5, lines 25-31).*

**Kirsh discloses building a meta-index database by using collection indexes previously generated** using, for example, proprietary algorithms. **In contrast, the present invention generates privacy-preserving index structure collaboratively**, by passing a content vector from provider to provider within a provider group, each provider operating on the content vector with a randomized algorithm, each provider group sending their respective content vector to a designated host, and aggregating the content vectors of the provider groups into a materialized index which is the privacy-preserving index.

Applicants respectfully submit that meta-index database of Kirsh teaches away from "the privacy-preserving index structure mapping a plurality of keywords representing a content to be shared to the plurality of content providers." Rather, Kirsh discloses "effective search terms of the processed query 12 are then provided to the collection meta-index search engine 14 for analysis against a collection meta-index 16." (Reference is made to column 7, lines 55 – 57.) Kirsh further discloses "The meta-index 16 thus contains a set of documents that directly correspond to the set of document9ollections potentially searchable in response to any user query 12." Reference is made to column 7, lines 63 – 65.) Kirsh essentially teaches mapping queries to lists of matching documents. In contrast, **the present invention maps queries to lists of**

**matching providers.** Given a list of providers that may satisfy a query, it is up to the searcher to directly query such providers and request matching documents. The providers, on receiving a query and authenticating the searcher, return a list of documents filtered according to the access rights of the searcher. *(Reference is made to page 20, lines 7-13.)*

Claim 1 is thus not anticipated by Kirsh and the allowance of this claim and the claims dependent thereon is earnestly solicited. Independent claims 25 and 31 are allowable for containing a similar subject matter to that of claim 1. Therefore, claims 25 and 31 and the claims dependent thereon are also allowable.

#### **CLAIM REJECTION UNDER 35 U.S.C. 103**

Claims 2 – 8, 26 – 28, and 32- 34 were rejected under 35 U.S.C. 103(a) as being unpatentable over Kirsch in view of Best, et al. (U. S. Patent No. 2004/026080), herein referred to as "Best".

Claims 9 – 12, 19, 21-22, 29-30, and 35 were rejected under 35 U.S.C. 103(a) as being unpatentable over Kirsch as applied to claim 1 in view of Juels (U. S. Patent No. 2002/0026345), hereinafter referred to as "Juels".

Claim 13 was rejected under 35 U.S.C. 103(a) as being unpatentable over Kirsch as applied to claim 1 in view of Juels and further in view of Liskov, et. al. (U. S. Patent No. 2005/0076104), hereinafter referred to as "Liskov".

Claims 14 – 18 and 20 were rejected under 35 U.S.C. 103(a) as being

unpatentable over Kirsch as applied to claim 1 in view of Juels and Liskov, and further in view of Brookler, et. al. (U. S. Patent No. 6,879,976), hereinafter referred to as "Brookler".

Applicants respectfully traverse the foregoing rejections, and submit that that neither Kirsch, Best, Juels, Liskov, nor Brookler describes the present invention as a whole, and thus the claims on file are not obvious in view of either Kirsch, Best, Juels, Liskov, or Brookler, whether considered individually or in combination with each other. Consequently, the claims on file are allowable.

Applicants further respectfully submit that the rejected claims are allowable for depending on their respective allowable independent claims 1, 25, and 31.

Furthermore, Applicants do not limit the scope of the present invention to the features of the rejected dependent claims considered independently, but rather in combination with the features and limitations of their respective allowable independent claims 1, 25, and 31.

**CONCLUSION**

All the claims presently on file in the present application are in condition for immediate allowable, and such action is respectfully requested. If it is felt for any reason that direct communication would serve to advance prosecution of this case to finality, the Examiner is invited to call the undersigned at the below-listed telephone number.

Respectfully submitted,

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